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Cell-Based Drug Delivery and Use of Nano-and Microcarriers for Cell Functionalization

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Abstract

© 2017 WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim. Cell functionalization with recently developed various nano- and microcarriers for therapeutics has significantly expanded the application of cell therapy and targeted drug delivery for the effective treatment of a number of diseases. The aim of this progress report is to review the most recent advances in cell-based drug vehicles designed as biological transporter platforms for the targeted delivery of different drugs. For the design of cell-based drug vehicles, different pathways of cell functionalization, such as covalent and noncovalent surface modifications, internalization of carriers are considered in greater detail together with approaches for cell visualization in vivo. In addition, several animal models for the study of cell-assisted drug delivery are discussed. Finally, possible future developments and applications of cell-assisted drug vehicles toward targeted transport of drugs to a designated location with no or minimal immune response and toxicity are addressed in light of new pathways in the field of nanomedicine.

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Keywords

Animal models, Cell therapy, Drug delivery, Ischemia reperfusion, Polyelectrolyte and hybrid capsules